

# Selecting Perennial Forage Crops in Alaska

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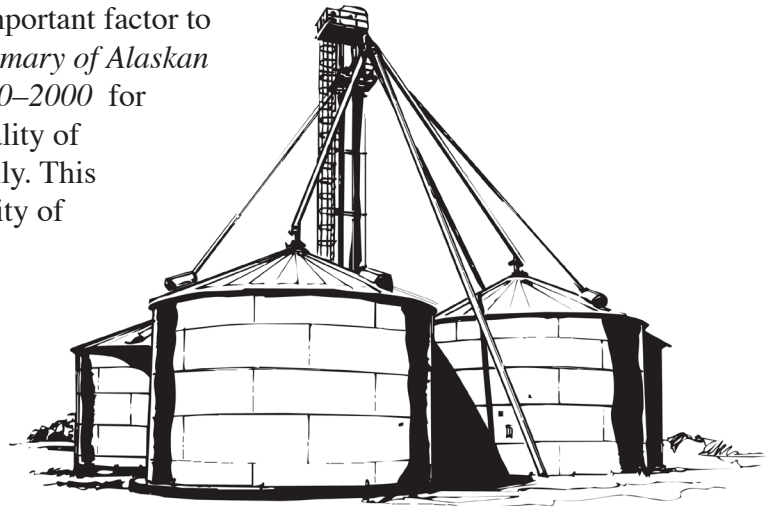
## Introduction

Forages contribute significantly to the agricultural industry of Alaska. They constitute the major ingredient in rations of many ruminant animals, such as cattle, sheep, goats and horses. Quality forage is essential for Alaska's dairy, red meat and game farming industries as well as for subsistence and pleasure or recreational use of livestock.

This publication summarizes the marketing, production and site adaptation considerations when selecting a forage crop in Alaska. A review of the latest *Alaska Agricultural Statistics* by the Alaska Agricultural Statistics Service provides the following information:

- **Types and numbers of livestock** in the various geographic areas of Alaska from which market demands may be estimated
- **Acres of cropland in forage production** with average yields for different areas of Alaska; information that helps estimate the forage supply potential or competition for markets
- **Value of forage crops** can be estimated from the previous average market price

Forage quality is an important factor to consider. Refer to *Summary of Alaskan Feed Analyses for 1990–2000* for information on the quality of forages produced locally. This helps identify the quality of competitive forages.



## PERSONAL PLANNING CONSIDERATIONS

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Establishing a perennial forage represents a long-term investment in a single cropping system. Properly maintained forage crops may remain productive for 15 or more years.

Selecting a specific perennial forage or combination of forages should be done only after careful consideration has been given to markets, transportation, storage, production equipment, environmental factors, production knowledge, economics and specific forages.

### *Markets*

Identify potential markets according to:

1. Class, age and condition of livestock to be fed
2. Quality of forage desired
3. Type of forage desired (hay, haylage, silage, pasture)
4. Physical product size and shape (bales, stacks, silage, pellets, cubes)
5. Demand over time (tons per week, month, year)
6. Distance from the producer

Refer to the *Buyer's Guide to Forage Products* for more marketing information. Also, look for specialty markets that may exist for a certain type, condition or variety of forage. As a marketing tool, consider producing forage under contract.

### *Transportation*

Consider any special equipment or handling requirements needed to move the product to market. Know in advance who will provide this service and how it will influence overall marketability of the product.

### *Storage*

The forage must be properly stored from harvest until it is marketed to maintain quality. The specific storage facility depends on the type of forage produced and what amount of loss, if any, is acceptable. Protection from moisture (rain, snow, or soil moisture) is absolutely necessary to preserve quality. Refer to *Hay Storage Management Considerations for Alaska* for more information.

### *Production Equipment*

The equipment requirement will vary with the type of forage being produced and the labor available. In addition, the equipment investment may vary with the availability of dealers, used equipment, parts and service, custom operators, and leasing opportunities. Some of the equipment used to produce forage includes a tractor, disk, packer, fertilizer spreader, seeder, sprayer, mower/conditioner, windrow inverter, tedder/rake, harvester (baler or chopper), wagon, bagger and a bale stacker.

<i>Environmental Factors</i>	Local climate records provide information on growing conditions and estimated precipitation during harvest and storage seasons. Soil test data indicate soil acidity and nutrient levels. Soil surveys available from the USDA - Soil Conservation Service provide information on soil depth, drainage and water holding capacity. This information will aid in developing the best management practices for the production area.
<i>Production Knowledge</i>	<p>Experience in forage production is highly advantageous. Managers should possess some knowledge in forage production, mold prevention, forage disease and nutrient deficiency symptoms, plant nutrition, weed control, identifying maturity stages, determining moisture contents, estimating rate of harvest, storage requirements and interpreting forage analyses. It is also desirable that managers be knowledgeable in business and financial management.</p> <p>Local Cooperative Extension Service offices have several forage production references including <i>Guidelines for Producing Quality Forage</i>.</p>
<i>Economics</i>	Carefully estimate the costs of all production aspects. Consider the variable costs including labor, fertilizer, herbicides, fuel, lubricants, machinery and equipment repair, custom hire, interest and other miscellaneous expenses. Fixed costs which must also be included are land, buildings, machinery ownership, forage stand replacement and taxes. Compare costs of production with the average crop value listed in the latest <i>Alaska Agricultural Statistics</i> . Be sure to include personal goals in the overall assessment of forage production economics. Continued success in this endeavor requires some economic advantage insuring that sufficient income is generated to meet production costs and personal goals.
<i>Selecting Specific Perennial Forage</i>	<p>The economic advantage in producing a quality forage can be enhanced by selecting the forage variety best adapted to production and marketing objectives. Forage plant characteristics will aid in that evaluation process.</p> <p>Note that seed may not be readily available for all varieties listed.</p>

## INDIVIDUAL FORAGE PLANT CHARACTERISTICS AND SITE ADAPTATIONS

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Tables 1 and 2 list the general site adaptations and plant characteristics of various grasses and legumes suggested for Alaska. Site adaptations include the type of plant performance which might be expected under the indicated site conditions. Plant acidity tolerances should be considered relative to the soil pH ranges (slight, moderate, strong) resulting from laboratory soil analysis. All of these ratings are subjective and exceptions are to be expected. The listed plant characteristics are also subjective and should be used only as guides in selecting a suitable forage. For example “tall” growth height refers to plants that, when mature, have elevated a significant portion of their leaves on stems well above the plant base. “Short” growth plants have the majority of their leaves arising from the base of the plant. Both are subject to wide variations in actual height depending on nutritional and climatological conditions. Before planting a forage crop contact the local Cooperative Extension Service office for specific information on locally adapted varieties, their performance and suggested production practices.

Table 3 cross references the common and scientific names of grasses and legumes suggested for Alaska.

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**Table 1. General Characteristics and Site Adaptations of Grasses**

		<b>Alpine Bluegrass</b>	<b>Glaucous Bluegrass</b>	<b>Kentucky Bluegrass</b>	
<b>Site Adaptations</b>	Drought Resistance	fair	good	fair	
	Wetness & Flood Tolerance	poor	poor	good	
	Acidity Tolerance	fair	fair	fair	
<b>Plant Characteristics</b>	Recommended Varieties	Gruening	Tundra	Merion, Nugget, Park	
	Seedling Vigor	good	poor	fair	
	Yield Potential (forage)	low	low	moderate	
	Longevity	long	long	long	
	Root System	bunch	bunch	sod	
	Mature Height	short	short	short	
	Palatability	fair	poor	good	
	Recovery Rate (after cutting)	slow	slow	rapid	
	Seed Production	moderate	moderate	low	
	Winter Hardiness	high	high	high	
		<b>Smooth Brome*</b>	<b>Reed Canarygrass</b>	<b>Hard Fescue</b>	<b>Red Fescue</b>
<b>Site Adaptations</b>	Drought Resistance	good	fair	good	good
	Wetness & Flood Tolerance	fair	very good	poor	fair
	Acidity Tolerance	very poor	very good	fair	good
<b>Plant Characteristics</b>	Recommended Varieties	Polar, Carlton, Manchar	Palaton, Vantage, Venture	Tournament, Scaldis	Arctared, Boreal
	Seedling Vigor	good	good	good	very good
	Yield Potential (forage)	high	high	low	moderate
	Longevity	long	intermediate	long	long
	Root System	sod	sod	bunch	bunch
	Mature Height	tall	tall	tall	short
	Palatability	good	fair	fair	fair
	Recovery Rate (after cutting)	moderate	rapid	slow	moderate
	Seed Production	high	moderate	moderate	moderate
	Winter Hardiness	high	moderate	high	high
		<b>Creeping Foxtail</b>	<b>Meadow Foxtail</b>	<b>Bering Hairgrass</b>	<b>Tufted Hairgrass</b>
<b>Site Adaptations</b>	Drought Resistance	poor	fair	poor	good
	Wetness & Flood Tolerance	very good	very good	good	fair
	Acidity Tolerance	very poor	good	good	good
<b>Plant Characteristics</b>	Recommended Varieties	Garrison	Common	Norcoast	Nortran
	Seedling Vigor	good	good	good	good
	Yield Potential (forage)	high	moderate	high	moderate
	Longevity	long	long	long	long
	Root System	sod	bunch	bunch	bunch
	Mature Height	tall	tall	medium	medium
	Palatability	good	good	fair	fair
	Recovery Rate (after cutting)	moderate	moderate	moderate	moderate
	Seed Production	low	low	moderate	moderate
	Winter Hardiness	high	high	moderate	high

Table 1 continued on next page.

**Table 1. General Characteristics and Site Adaptations of Grasses** (continued)

		<b>Polargrass</b>	<b>Bluejoint Reedgrass</b>	<b>American Sloughgrass</b>
<b>Site Adaptations</b>	Drought Resistance	poor	good	poor
	Wetness & Flood Tolerance	good	good	very good
	Acidity Tolerance	very good	very good	fair
<b>Plant Characteristics</b>	Recommended Varieties	Alyeska	Sourdough	Egan
	Seedling Vigor	poor	poor	good
	Yield Potential (forage)	moderate	high	low
	Longevity	long	long	intermediate
	Root System	bunch	bunch	bunch
	Mature Height	medium	tall	medium
	Palatability	fair	fair	fair
	Recovery Rate (after cutting)	slow	moderate	slow
	Seed Production	moderate	low	high
	Winter Hardiness	high	very high	high
		<b>Timothy*</b>	<b>Beach Wildrye</b>	<b>Siberian Wildrye</b>
<b>Site Adaptations</b>	Drought Resistance	poor	very good	very good
	Wetness & Flood Tolerance	good	good	poor
	Acidity Tolerance	good	fair	fair
<b>Plant Characteristics</b>	Recommended Varieties	Engmo, Adda, Korpa	**	Kamalinksii 7
	Seedling Vigor	good	very poor	good
	Yield Potential (forage)	high	moderate	high
	Longevity	long	long	short
	Root System	bunch	sod	bunch
	Mature Height	tall	tall	tall
	Palatability	good	fair	good
	Recovery Rate (after cutting)	slow	moderate	moderate
	Seed Production	moderate	very low	very high
	Winter Hardiness	high	high	high

\* Most commonly grown grasses

\*\* Native, seed may not be commercially available.

Source: *A Revegetative Guide for Conservation Use in Alaska*

**Table 2. General Characteristics and Site Adaptations of Legumes** <sup>1, 2</sup>

		<b>Alfalfa</b>	<b>Alsike Clover</b>	<b>Red Clover</b>	<b>Sweet Clover</b>	<b>White Dutch Clover</b>
<b>Site Adaptations</b>	Drought Resistance	good	fair	fair	good	fair
	Wetness & Flood Tolerance	poor	good	fair	poor	fair
	Acidity Tolerance	poor	good	fair	poor	poor
<b>Plant Characteristics</b>	Recommended Varieties	Siberian	Aurora	Altaswede	Arctic	<sup>3</sup>
	Yield Potential (forage)	moderate	moderate	high	high	low
	Longevity	long	short	short	short	short
	Root System	tap	fibrous	fibrous	tap	fibrous
	Mature Height	medium	medium	medium	tall	short
	Palatability	good	good	good	poor	good
	Recovery Rate (after cutting)	slow	moderate	moderate	rapid	moderate
	Seed Production	low	moderate	moderate	high	moderate
	Winter Hardiness	moderate	moderate	moderate	moderate	moderate

<sup>1</sup> Legumes are highly susceptible to winterkill in the absence of adequate snow cover. All are generally less productive in the interior of Alaska. Source: A Revegetative Guide for Conservation Use in Alaska.

<sup>2</sup> Beware of special conditions which may lead to various clover toxicities in livestock.

<sup>3</sup> Use seed from most northern grown sources.

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**Table 3. Common and Scientific Names of Grasses and Legumes**

COMMON NAME	SCIENTIFIC NAME
<b>Grasses</b>	
Alpine Bluegrass (Gruening)	<i>Poa alpina</i>
American Sloughgrass (Egan)	<i>Beckmannia syzigachne</i>
Beach Wildrye	<i>Elymus mollis</i>
Bering Hairgrass (Norcoast)	<i>Deschampsia beringensis</i>
Bluejoint Reedgrass (Sourdough)	<i>Calamagrostis canadensis</i>
Creeping Foxtail (Garrison)	<i>Alopecurus arundinaceus</i>
Glaucous Bluegrass (Tundra)	<i>Poa glauca</i>
Hard Fescue (Tournament, Scalds)	<i>Festuca ovina duriuscula</i>
Kentucky Bluegrass (Nugget, Merion, Park)	<i>Poa pratensis</i>
Meadow Foxtail (common)	<i>Alopecurus pratensis</i>
Polargrass (Alyeska)	<i>Arctagrostis latifolia</i>
Red Fescue (Arctared, Boreal)	<i>Festuca rubra</i>
Reed Canarygrass (Palaton, Vantage, Venture)	<i>Phalaris arundinacea</i>
Siberian Wildrye (Kamalinskii 7)	<i>Elymus sibiricus</i>
Smooth Brome (Polar, Manchur, Carlton)	<i>Bromus inermis</i>
Timothy (Engmo, Korpa, Adda)	<i>Phleum pratense</i>
Tufted Hairgrass (Nortran)	<i>Deschampsia caespitosa</i>
<b>Legumes</b>	
Alsike Clover (Aurora)	<i>Trifolium hybridum</i>
Red Clover (Altaswede, Kenland)	<i>Trifolium pratense</i>
Alfalfa (Siberian)	<i>Medicago falcata</i>
White Dutch Clover	<i>Trifolium repens</i>
White Sweet Clover	<i>Melilotus alba</i>
Yellow Sweet Clover	<i>Melilotus officinalis</i>

Source: *A Revegetative Guide for Conservation Use in Alaska*

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*The use of brand names in this publication does not imply endorsement by the Cooperative Extension Service.*

*For more information, contact your local Cooperative Extension Service office or Thomas R. Jahns, Extension Faculty, Agriculture and Horticulture, at 907-262-5824 or [fftrj@uaf.edu](mailto:fftrj@uaf.edu). This publication was originally developed by Don Quarberg, Extension Agricultural Agent, in 1994. Technical review by Thomas R. Jahns in 2009.*

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